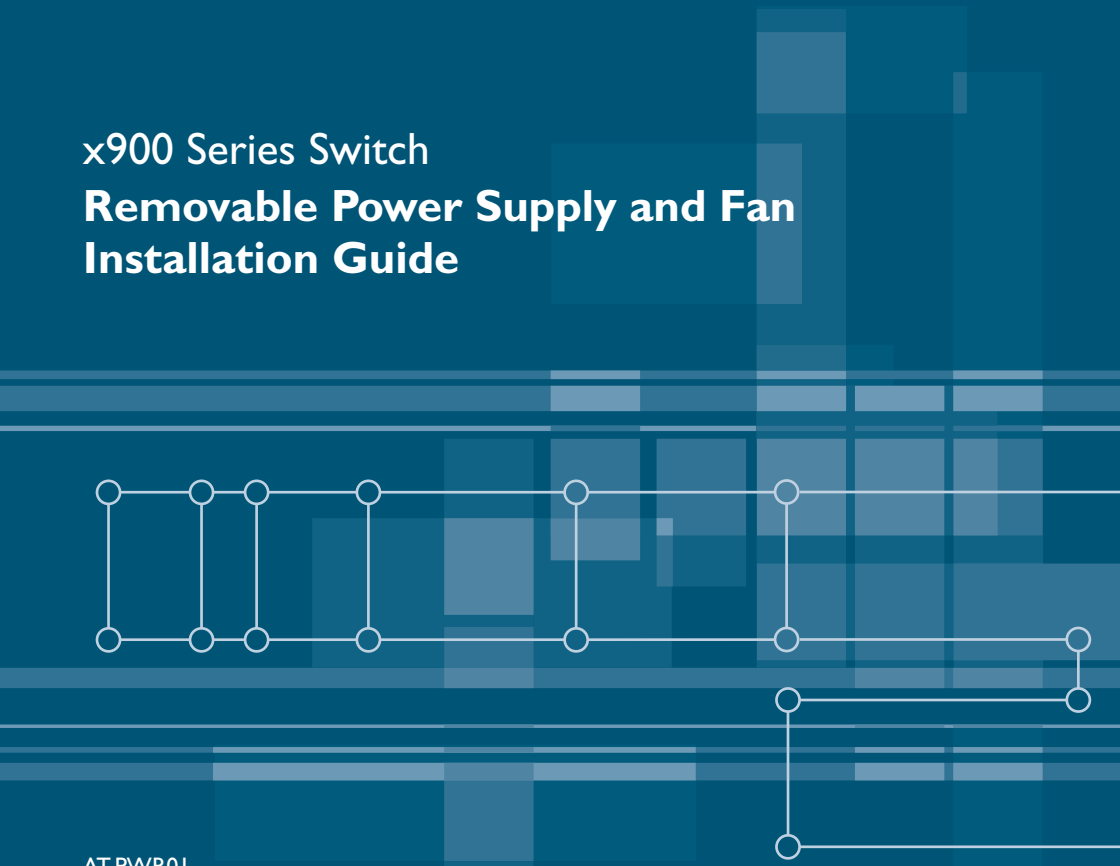
x900 Series Switch

Removable Power Supply and Fan Installation Guide



AT-PWR01
AT-PWR02
AT-FAN01

Allied Telesis

Removable Power Supply and Fan Installation Guide for x900 Series Switch, Document Number C613-04057-00 REV D

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Models Covered by this Guide

This document describes how to install the following models:

- AT-PWR01 PSU, either AC or DC power supply unit
- AT-PWR02 PSU, AC power supply unit only
- AT-FAN01, fan-only module

Compatible Switches

The following table shows which models of PSUs and FOMs are appropriate for individual switches.

Switch	PWR01	PWR02	FAN01
AT-8948 and x900-48FE	✓	✓	✓
AT-9924T, AT-9924SP, AT-9924T/4SP	✓	✓	✓
AT-9924Ts and x900-24X	✓		✓

Package Contents

Each switch is supplied with a single power supply unit (PSU), either AC or DC. Depending on the model, the switch also has a fan-only module (FOM) or a blanking panel.

- The AT-8948, AT-9924Ts, x900-24X, and AT-9924T/4SP switches have a PSU and a FOM installed.
- The x900-48FE, AT-9924T, and AT-9924SP switches have a PSU and a blanking panel installed.

The following items are included with each factory-installed PSU. Contact your authorised distributor or reseller if any are damaged or missing.

- one AC power cord (AC model)
- one power cord retaining clip (AC model)
- one warranty card

The following items are included with PSUs purchased separately:

- one AC power cord (AC model)
- one power cord retaining clip (AC model)
- one Installation Guide
- one warranty card

The following items are included with each FOM purchased separately:

- one Installation Guide
- one warranty card

Installing a Power Supply Unit

Warning All AC and DC versions of this equipment must be earthed.

Do **not** install an AC PSU and a DC PSU in the same switch chassis.

If you remove a PSU or FOM from the switch, immediately replace it or cover the bay with a blanking panel. This prevents dust and debris from entering the chassis and maintains proper airflow in the switch.

AC power supply unit specifications

Important information for service personnel:

- CAUTION: double pole/neutral fusing
- the rating of fuses FH101 and FH102 is 250 V, 5 A (AT-PWR01 only)

DC supply cable and power supply specifications

- three-core cable is required
- minimum core size: 3.3 mm^2 (12 AWG) high strand count copper wire
- minimum cable rating: 600 V, 90 degrees Celsius

DC power supply specifications

- 40 to 60 V, 48 V nominal
- supports either positive grounded or negative grounded operation
- a 15 Amp certified/listed circuit breaker is required for circuit protection

Installing a power supply unit or fan-only module

Before you begin:

- Read the safety information for the switch.

  Safety information is available in the Installation and Safety Guide that is on the CD-ROM for the switch. Or you can download this document from www.alliedtelesis.com/support/software.

- Gather necessary tools and equipment.

  You may need a Phillips #2 screwdriver to adjust the retaining screws on a PSU or FOM.

  To install a DC version of the PSU, you need an appropriate DC power source, DC supply cable, ring connectors, and a crimp tool.

- Verify the package contents if you have not already done so.

  See "Package Contents" on page 4. Contact your authorised distributor or reseller if items are damaged or missing.

1. **Unpack the power supply unit.**

Caution Follow correct anti-static procedures when installing either a PSU or FOM. Failure to do so could damage the PSU, FOM, or switch. If you are unsure about correct procedures, contact your authorised distributor or reseller.

While observing Electro Static Discharge (ESD) precautions, remove the PSU or FOM from its packing material in an anti-static environment.

2. **Disconnect the power supply from the power supply unit.**

Warning Disconnect the power cord before removing the PSU.

For AC models, turn off the main power supply to the PSU and disconnect the power cord.

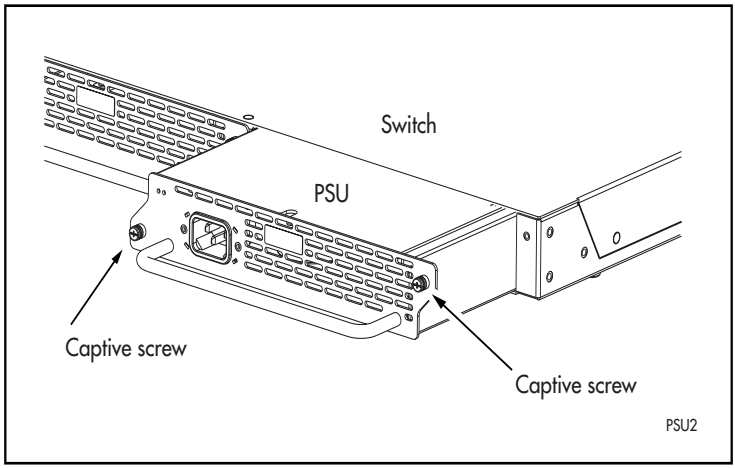
For DC models, push the Run/Standby control and release it to the Off position using a small diameter pin. When the Run/Standby control is not depressed, it is off. Disconnect the supply cable wires from the circuit breaker.

3. **For AC models only, install the power cord retaining clip.**

There is one retaining clip for the AC power inlet on the PSU.

4. Remove the current power supply unit, fan-only module, or blanking panel from the switch.

Loosen the two captive Phillips screws until the they are fully loosened.



If a PSU or FOM is in the bay, slide it out slowly and carefully. Support the device from underneath as you remove it to prevent it from falling.

When you have one PSU for AT-9924T and AT-9924SP models, it must be installed in bay 2 to optimise cooling.

⚠ **Caution** Cover empty bays because dust and debris could overheat or damage the PSU and switch.

5. Insert another power supply unit.

⚠ **Caution** Keep the PSU or FOM in straight alignment and insert it slowly. Forcing a misaligned PSU or FOM is likely to damage both the chassis and PSU or FOM.

Slowly and carefully slide the PSU or FOM into the power supply bay.

Firmly press the PSU or FOM until the faceplate engages, or nearly engages, the chassis.

6. Secure the power supply unit.

Tighten the two captive Phillips screws on the faceplate of the PSU or FOM (see figure in Step 4).

Applying Power to the Power Supply Unit

For an AC power supply unit

To apply power to the PSU, plug the AC power cord that is provided into the power inlet on the faceplate of the PSU. Then connect the power cord to the main power supply.

For a DC power supply unit

Only trained and qualified personnel should connect a DC power supply.

For centralised DC power connection, the switch should be installed in **restricted access areas only** (such as dedicated equipment rooms or equipment closets) in accordance with Articles 110-16, 110-17, and 110-18 of the National Electrical Code, ANSI/NAPA 70.

Warning Ensure that the power cable is not live before starting.

1. Remove the transparent protective terminal cover.
2. Strip the supply cable wires to expose 7.5mm (0.31 in.) of bare conductor. Terminate the wire with a nylon insulated solderless ring tongue terminal, JST FN5.5-5 or equivalent, using a crimp tool.
3. Connect the ground wire to the ground terminal. Use the diagram on the rear panel of the switch to identify terminals. Tighten the terminal to between 2.4 and 4.0 Nm (21.3 and 35.4 lbf in).

Caution Check that the PSU terminals are wired to the correct polarity. You will damage the PSU if you incorrectly connect it.

4. Connect the positive feed to the + (positive) terminal and the negative feed to the - (negative) terminal. Tighten the terminals to between 2.4 and 4.0 Nm (21.3 and 35.4 lbf in).
5. Ensure there are no exposed cable strands.
6. Replace the cover. You **must** replace the transparent plastic terminal cover before continuing.
7. Secure the supply cable to the rack framework or a similar object to ensure that connections are isolated from any force applied to the cable.
8. Ensure the circuit breaker for the supply circuit and the Run/Standby control on the PSU are **off**. Use a small diameter pin to press and release the Run/Standby control so that it is not pushed in (which is the Off position).

9. Connect the supply cable wires to the circuit breaker.
10. Turn on the PSU by pushing in the Run/Standby control with a small diameter pin.

Checking LEDs

LEDs indicate the operational status on the faceplate of each PSU and on the front panel of the switch.

After you have inserted the PSU and powered on the switch, check the LEDs for correct operation by using the following tables.

Table 1: LEDs on the power supply unit and fan-only module

LED	State	Description
Fault	Red	The temperature of the PSU has exceeded the limit of 75° C (167° F), or the FOM has failed.
PWR	Green	A PSU is installed in the switch and is receiving power. FOMs do not have this LED.

Table 2: LEDs on the switch reporting PSU status

LED	State	Description
PSU 1	Green	PSU 1 is installed and supplying power to the switch. The voltage output is within specification.
	Red	PSU 1 is installed in the switch and has exceeded its recommended temperature threshold of 75° C (167° F), or the fan has failed. A FOM is installed in the switch and has failed. The bay is empty. Applies to AT-8948, AT-9924T/4SP, and AT-9924Ts switches since they require a FOM when only one PSU is installed.
	Off	A FOM is installed and operating at an acceptable speed. For AT-9924T and x900-48FE switches, a blanking panel is installed.

Table 2: LEDs on the switch reporting PSU status (Continued)

LED	State	Description
PSU 2	Green	PSU 2 is installed and supplying power to the switch. The voltage output is within specification.
	Red	PSU 2 is installed in the switch and has exceeded its recommended temperature threshold of 75° C (167° F), or the fan has failed. A FOM is installed in the switch and has failed. The bay is empty. Applies to AT-8948, AT-9924T/4SP, and AT-9924Ts switches since they require a FOM when only one PSU is installed.
	Off	A FOM is installed and operating at an acceptable speed. For x900-48FE switches, a blanking panel is installed.

Troubleshooting

If the PSU does not function as expected:

- check that all cable connections are correct and secure.
- check that the standby switch has been pressed and is in the On position (DC models).
- check that the PSU is receiving the correct AC voltage (AC models).
- if LEDs indicate a PSU fault, replace the PSU or have your authorised distributor or reseller service it.

Additional troubleshooting information is in the Hardware Reference for the switch.

Where to Find More Information

- The Hardware Reference for your switch provides detailed information on the switch and its hardware features.
- The Software Reference for your switch provides detailed information to configure the switch and its software.
- The Installation and Safety Guide for your switch describes how to install your switch and includes statutory and safety information.

You can download these documents from www.alliedtelesis.com.

Standards

Products in this document meet the following standards:

	Approval Agency and Requirement
	UL60950-1 CAN/CSA-C22.2 No. 60950-1-03 EN60950-1 AS/NZS 60950
Electromagnetic Compliance	FCC CFR47 Part 15 Class A EN55022 Class A VCCI Class A AS/NZS CISPR22 Class A CNS 13438 Class A EN61000-3-2/3
Immunity	EN55024

U.S. Federal Communications Commission

RADIATED ENERGY

Note: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Note: Modifications or changes not expressly approved by the manufacturer or the FCC can void your right to operate this equipment.

Canadian Department of Communications

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI－ A

警告使用者：
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BSMI- A

EC Declaration of Conformity

We: **ALLIED TELESIS LABS LIMITED**
27 NAZARETH AVENUE
CHRISTCHURCH 8024
NEW ZEALAND

Declare under our sole legal responsibility that the following product meets the safety, protection and conformity requirements of council directives 1999/5/EC 73/23/EEC and 89/336/EEC, as amended by 93/68/EEC, on the approximation of the laws of member states relating to electromagnetic compatibility, electrical safety and the mutual recognition of conformity of telecommunications terminal equipment

AT-PWR01, AT-PWR02, and AT-PWR01-80 Power Supply Units

to which this declaration relates are in conformity with the following relevant harmonized standards, the reference numbers of which have been published in the Official journal of the European community.

EN55022: 1998	Information Technology Equipment—Radio disturbance
EN55024: 1998	Information Technology Equipment—Immunity characteristics—Limits and methods of measurement.
EN60950-1: 2001	Information Technology Equipment including electrical business equipment—General Requirements.
EN61000-3-2: 2000	Electromagnetic compatibility (EMC) - part 3-2: Limits for harmonic current emissions (equipment input current up to and including 16A per phase).
EN61000-3-3: 1995	Electromagnetic compatibility (EMC) - part 3-3: Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current up to 16A.

Name: John Shields
On behalf of the Manufacturer

Position: Managing Director

Signature:

Date: 1 March 2006